

NAVAJO NATION
ENVIRONMENTAL
PROTECTION AGENCY
WATER QUALITY/NPDES

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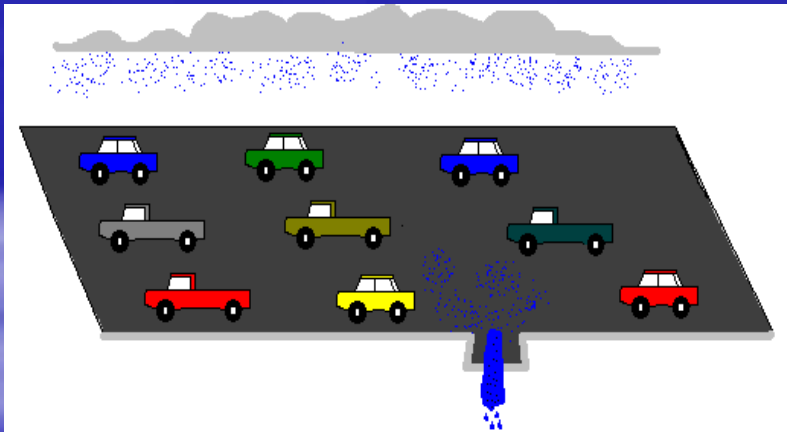
Navajo EPA Water Quality Program's Mission

- To ensure that “the waters of the Navajo Nation attain, support , and maintain designated uses” as specified in the Water Quality Standards. The designation uses include domestic water supplies, recreation, fish and wildlife, livestock watering, and agriculture
- irrigation.



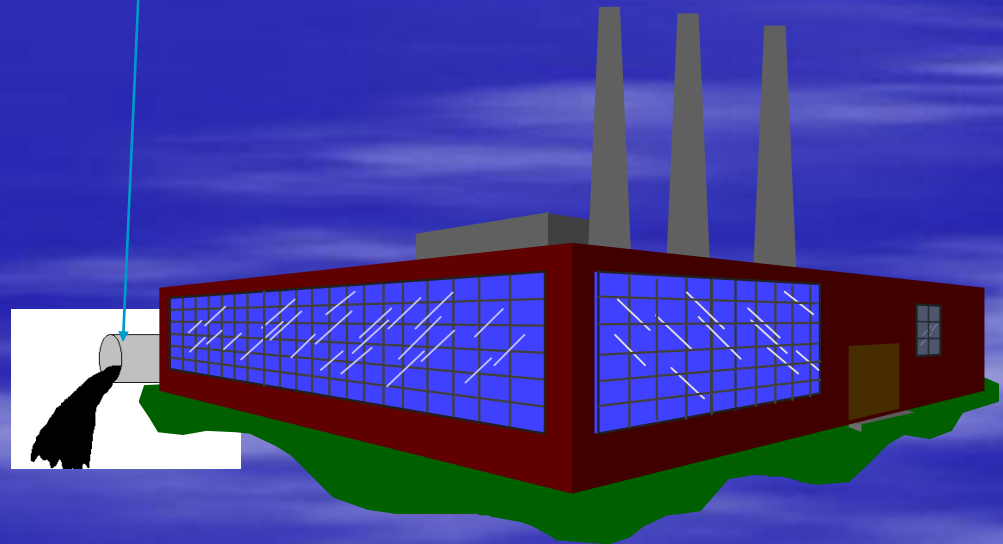
Non-Point Source Pollution

Water pollution that cannot be traced to a specific point, because it comes from many individual places or a widespread area.



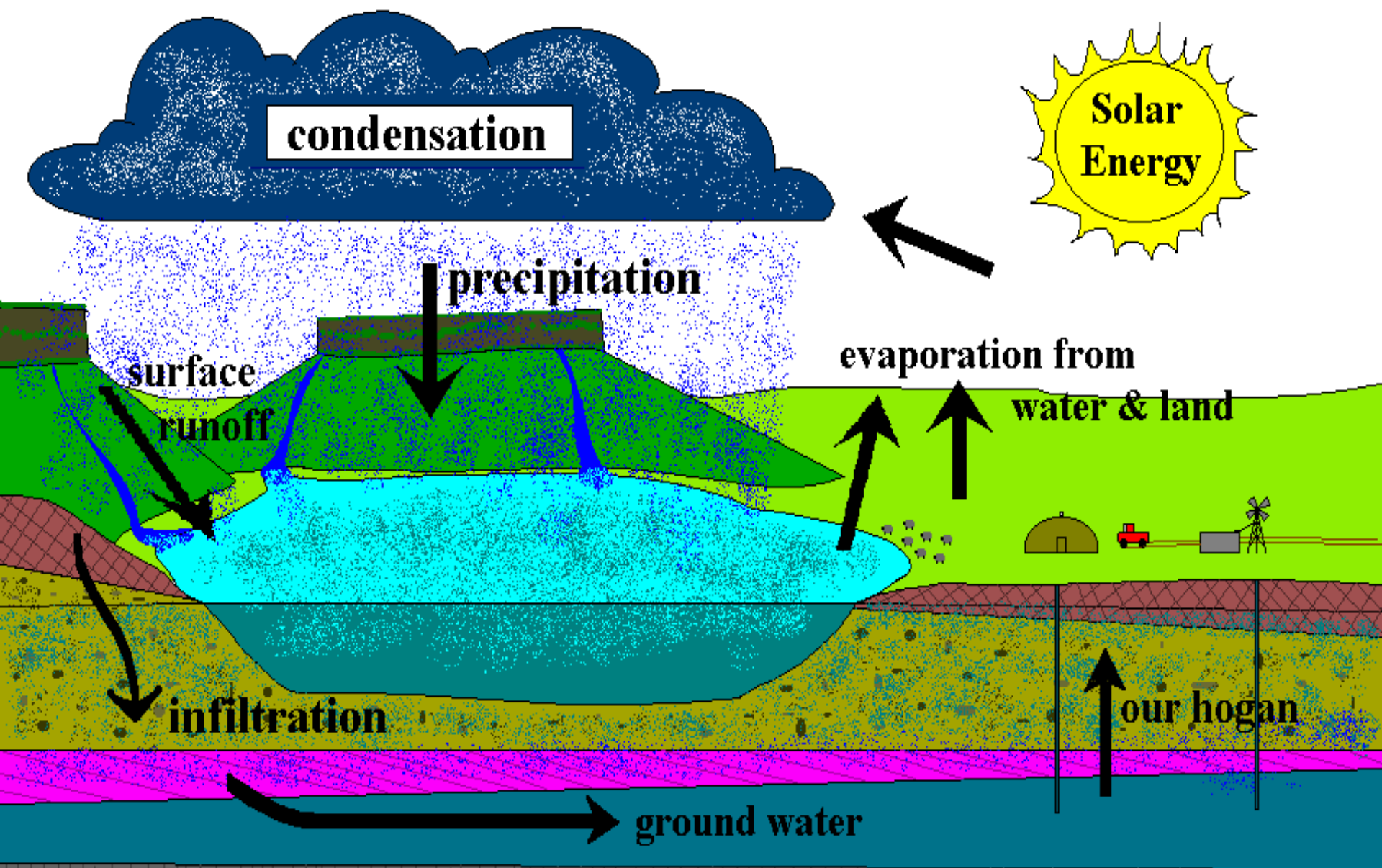
Point Source Pollution

Pollution that can be traced to a single point source, such as a pipe or culvert.

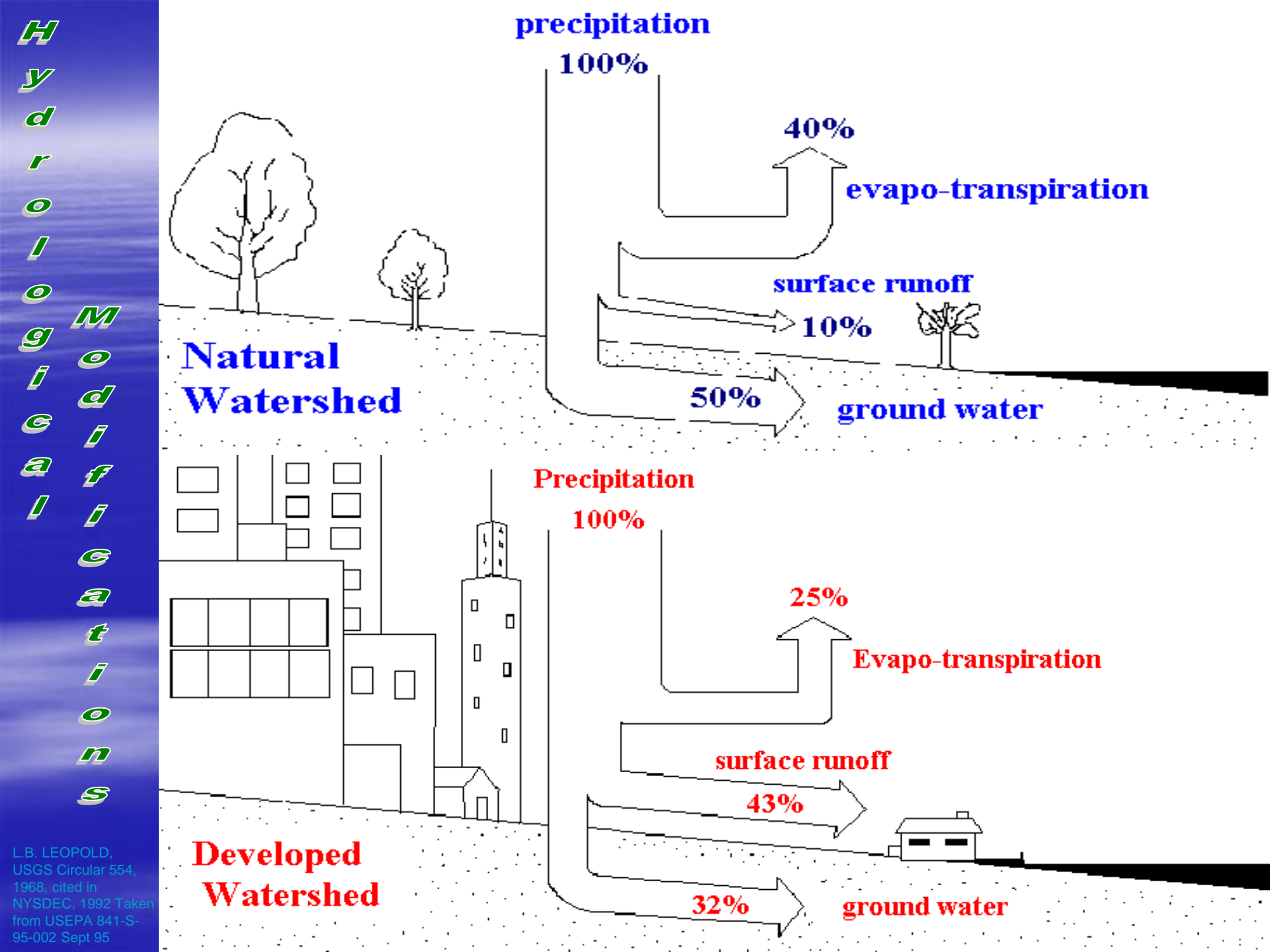


Water Cycle





THE WATER CYCLE



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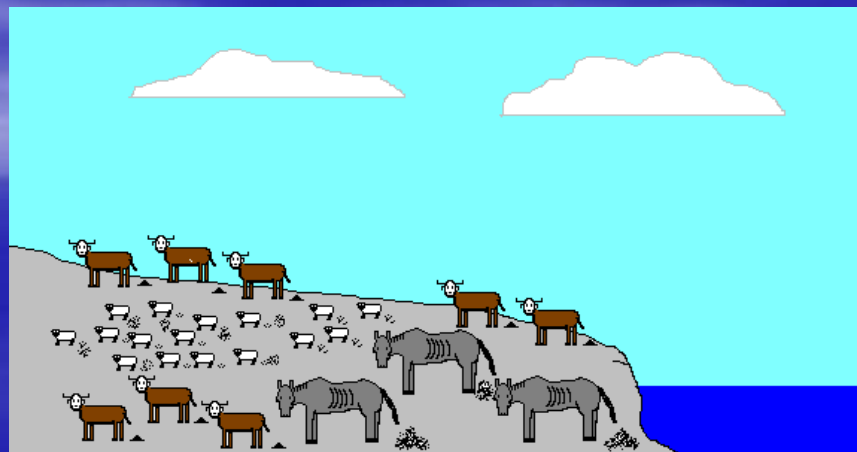
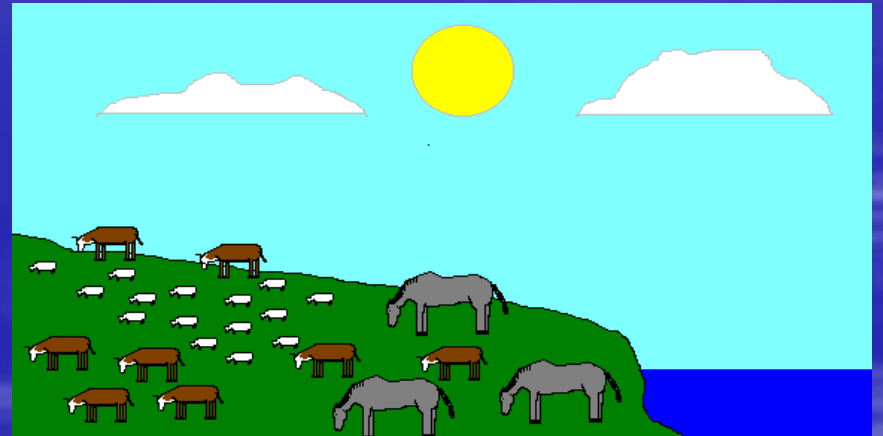
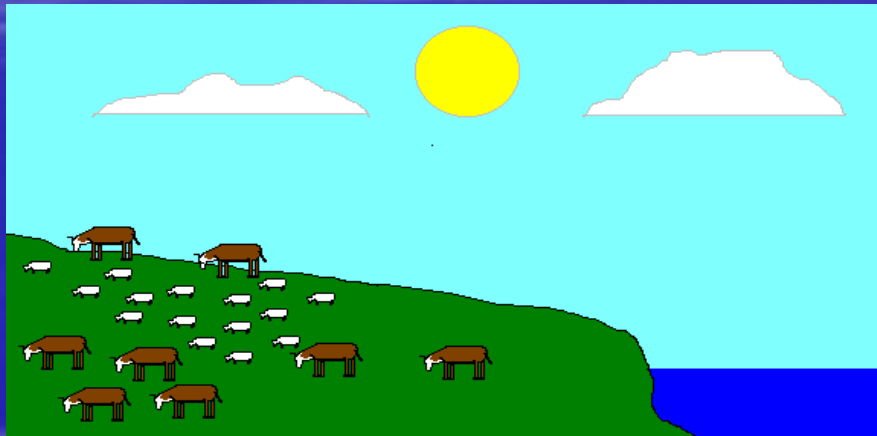
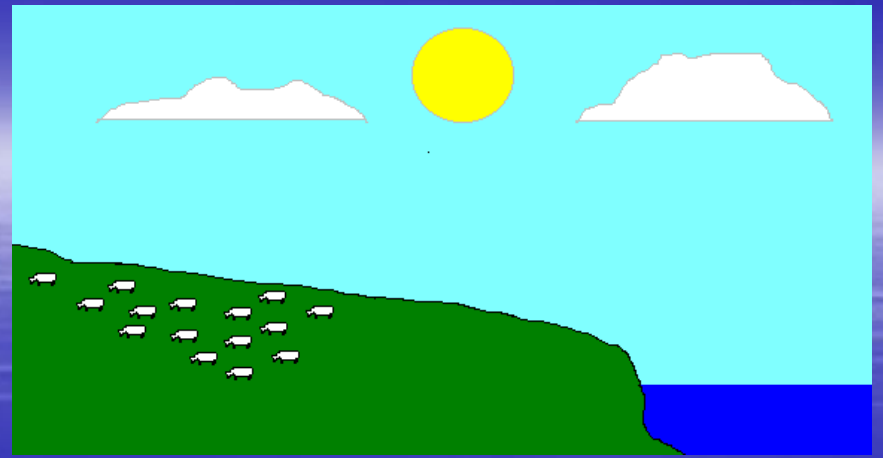
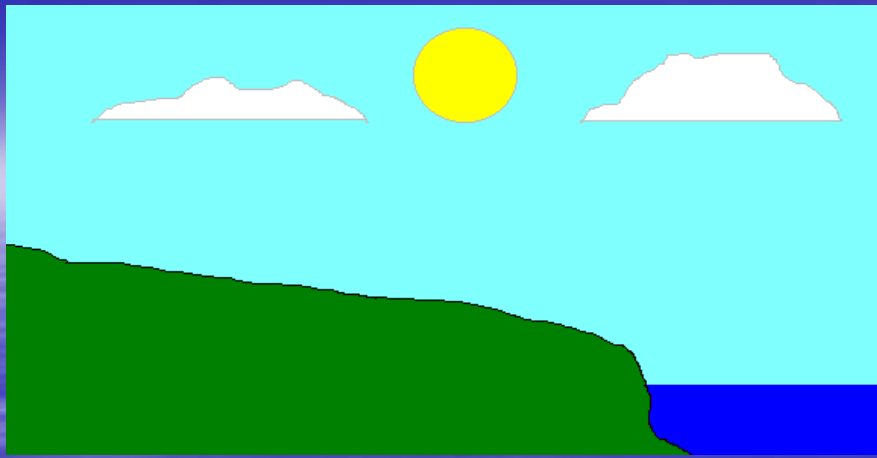
L.B. LEOPOLD,
USGS Circular 554,
1968, cited in
NYSDEC, 1992 Taken
from USEPA 841-S-
95-002 Sept 95

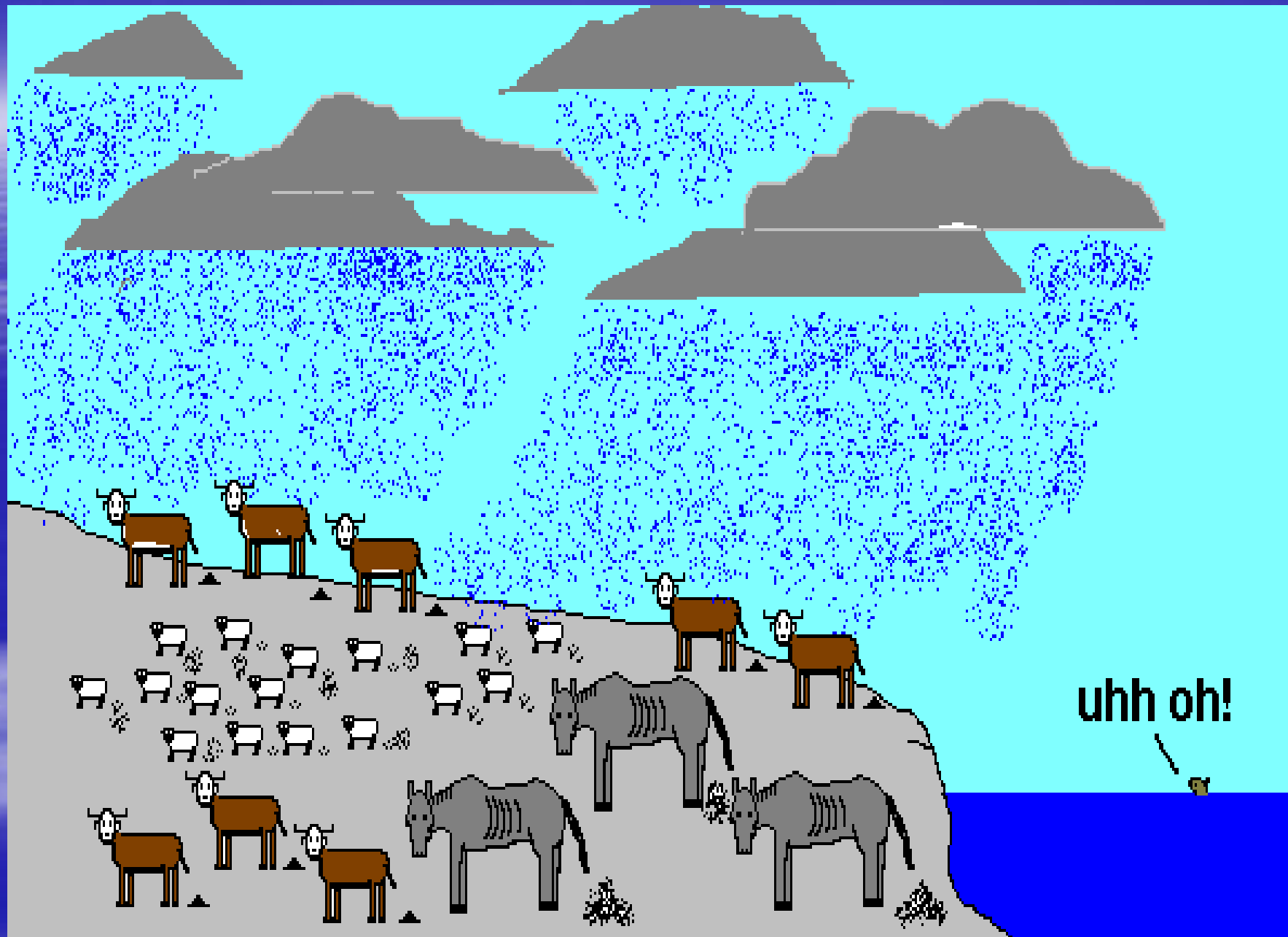
Nonpoint Source Pollution Generating Activities On The Navajo Nation

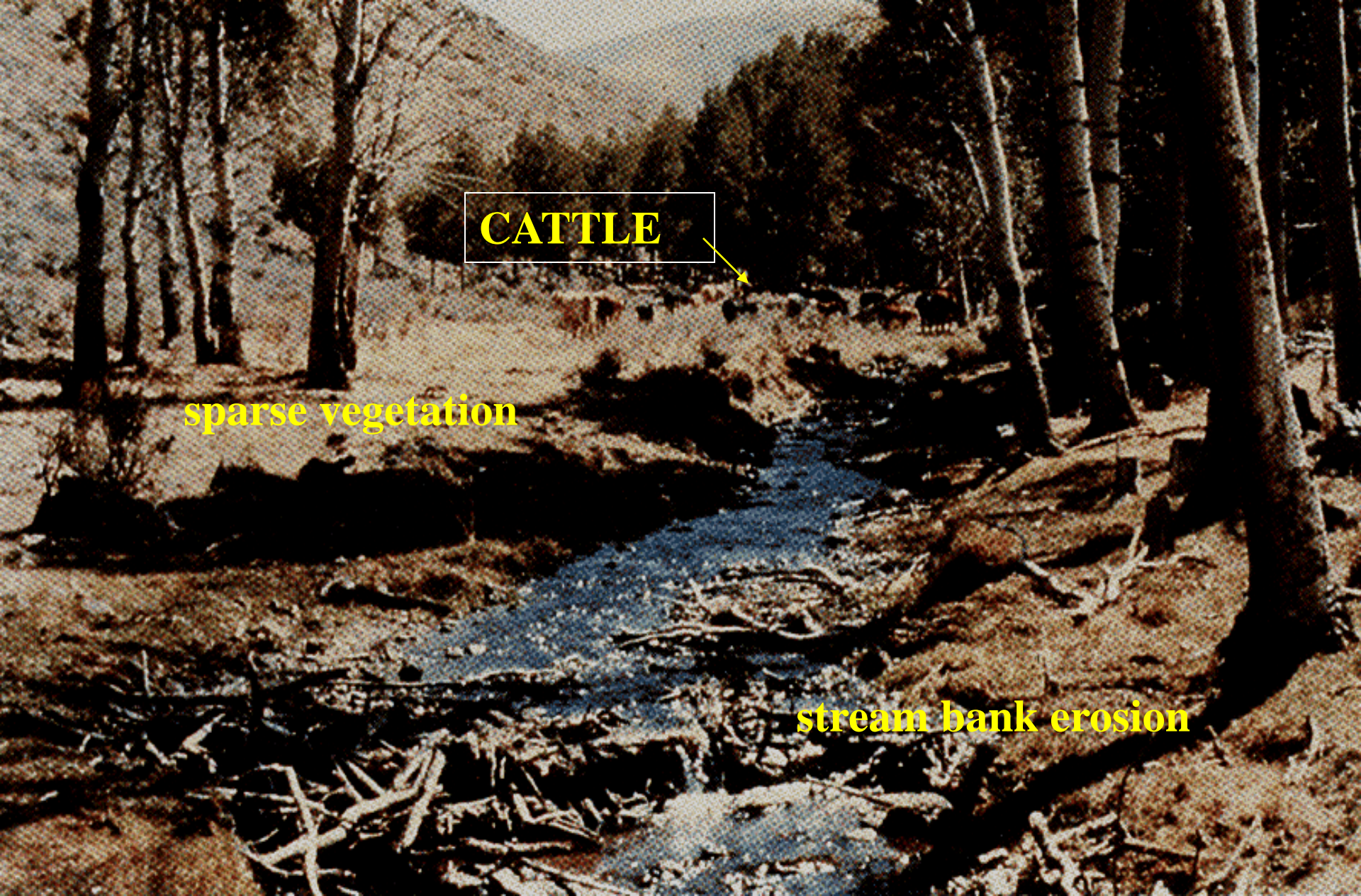
- **Unmanaged grazing**
- **Off road travel**
- **Construction activity**
- **Irrigated agriculture**
- **Illegal Trash dumping**

UNMANAGED GRAZING

- Grazing area that can't sustain the number of livestock grazing based on acreage and foliage available.
- Causing to lose vegetation cover
- Increase runoff
- Increase water and wind erosion (Losing top soil)
- Increase the amount of pollution being carried off land into streams, lakes, wet meadow and stock pond where livestock drink water.
- Decrease water infiltration to recharge groundwater
- Lowering water table







sparse vegetation

stream bank erosion

UNMANAGED GRAZING AREA



CONTROLLED GRAZING

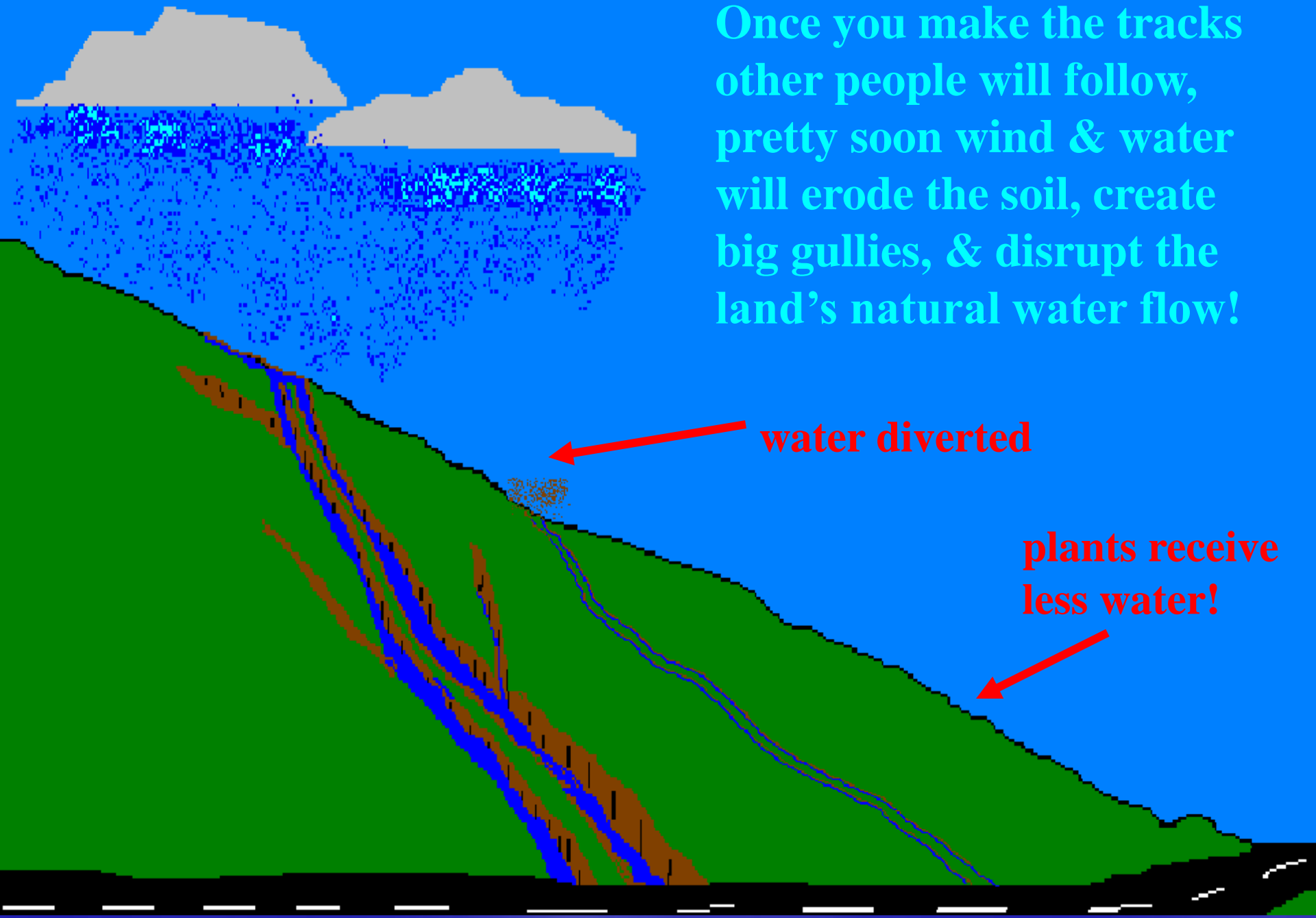
Creating unnecessary dirt roads with vehicles and ATVs

- Roads alter water movement across the landscape, which can concentrate and accelerate flow and cause soil erosion and gully formation
- Causes affected areas to dry out and lose production
- Transporting sediment downstream into streams, lakes, wet meadows and stock ponds
- Sediment washed from roads impairs water quality, damages fish and wildlife habitat, silts in reservoirs and clogs culverts

Say "NO" to creating new dirt roads!



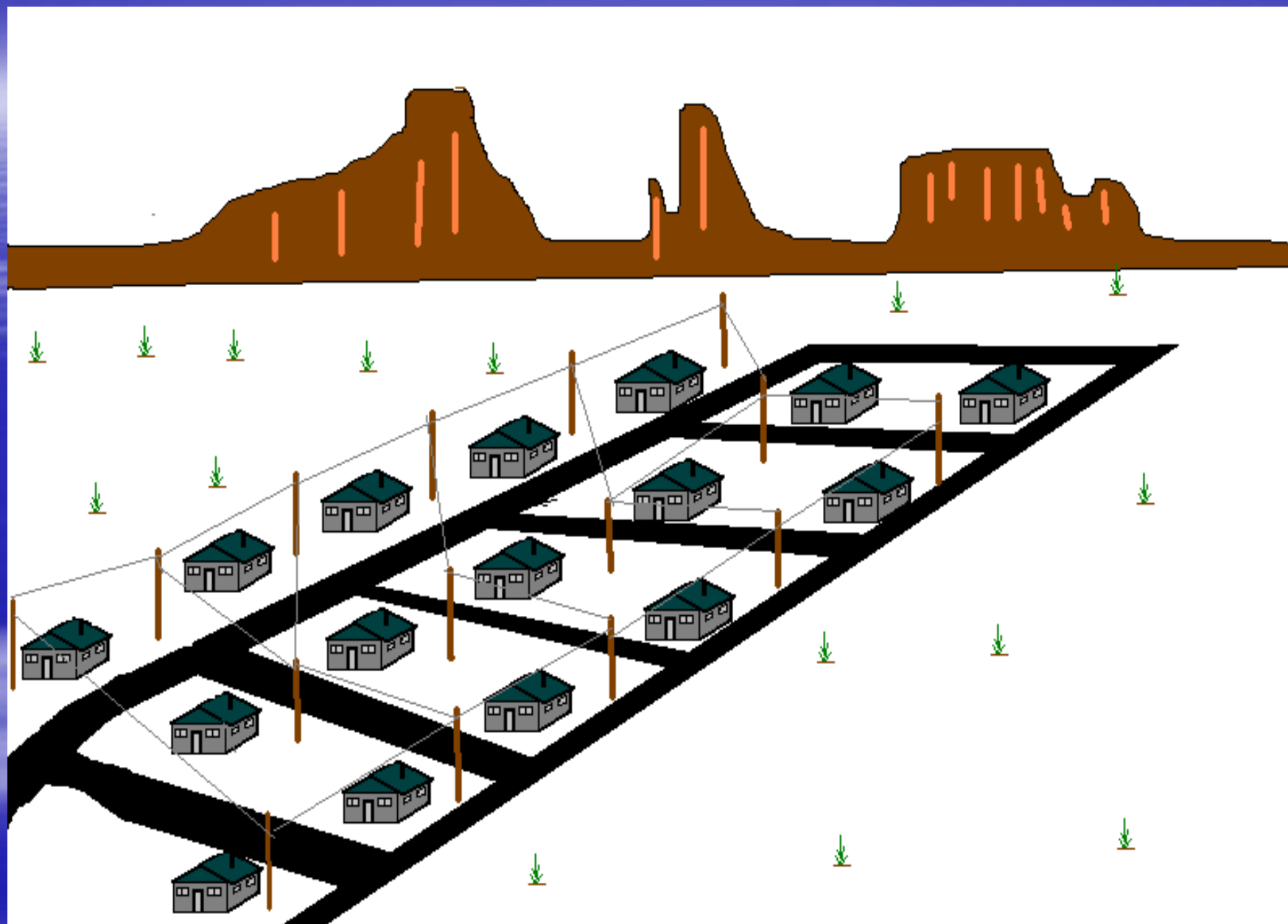
Once you make the tracks
other people will follow,
pretty soon wind & water
will erode the soil, create
big gullies, & disrupt the
land's natural water flow!



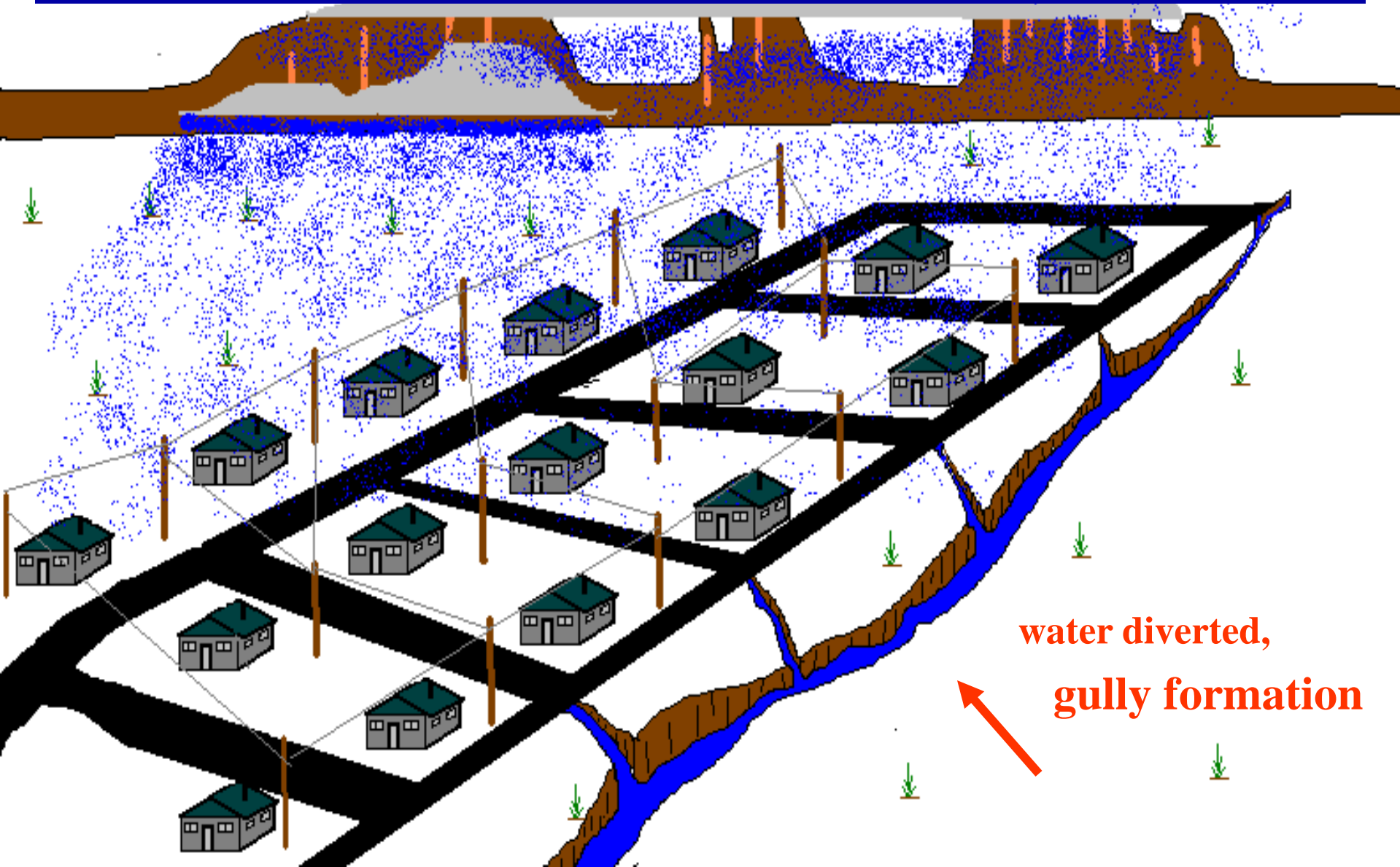
Construction Activity

Need to use Best Management practices

Use best drainage designs to reduce gully formation



When you develop an area, water isn't allowed to flow equally over the land. Water runs off roofs & is diverted, creating gullies & causing, among other things, loss of vegetation & erosion. Please be careful how & where you build.



Improper road drainage designs



Culvert Inlet Elevation too low

1/27/2000 12:07pm



1/27/2000 2:07pm

Start of gully



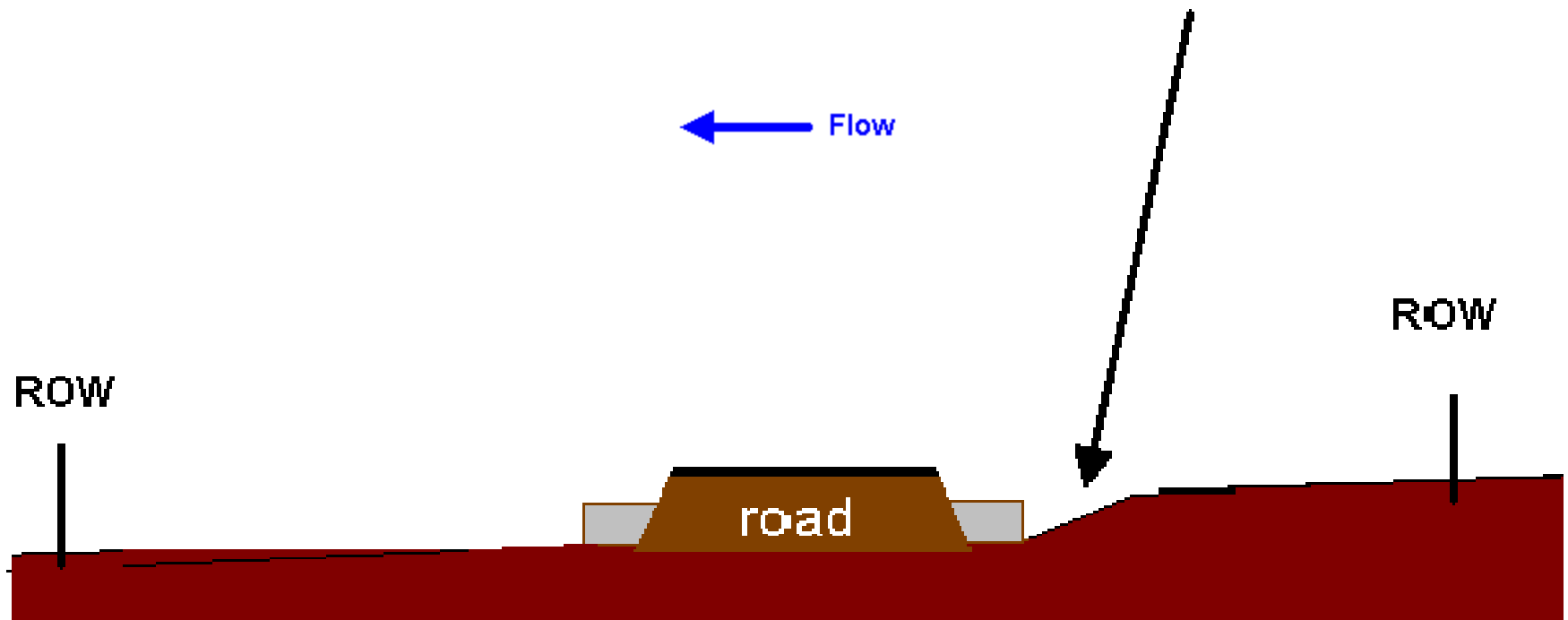
1/27/2000 2:09pm

Existing stream contour profile

← Flow



Culvert inlets and outlets are contoured within the right-a-way

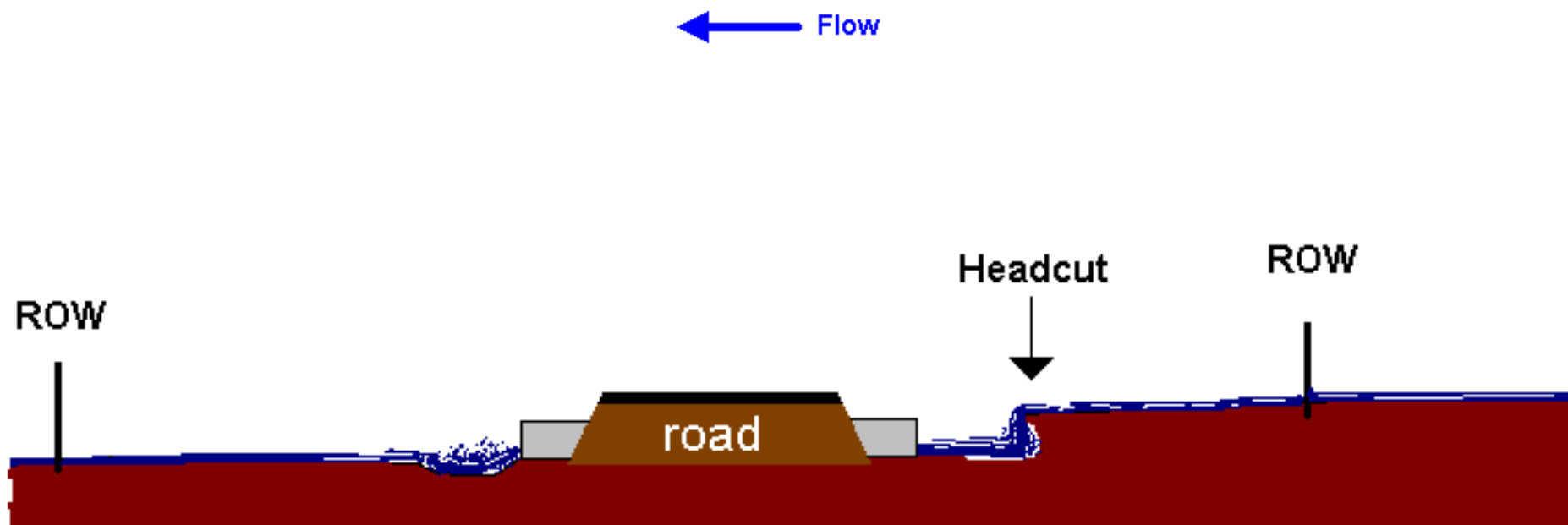


Cross section of culvert placed below existing grade on wash, stream, or arroyo.

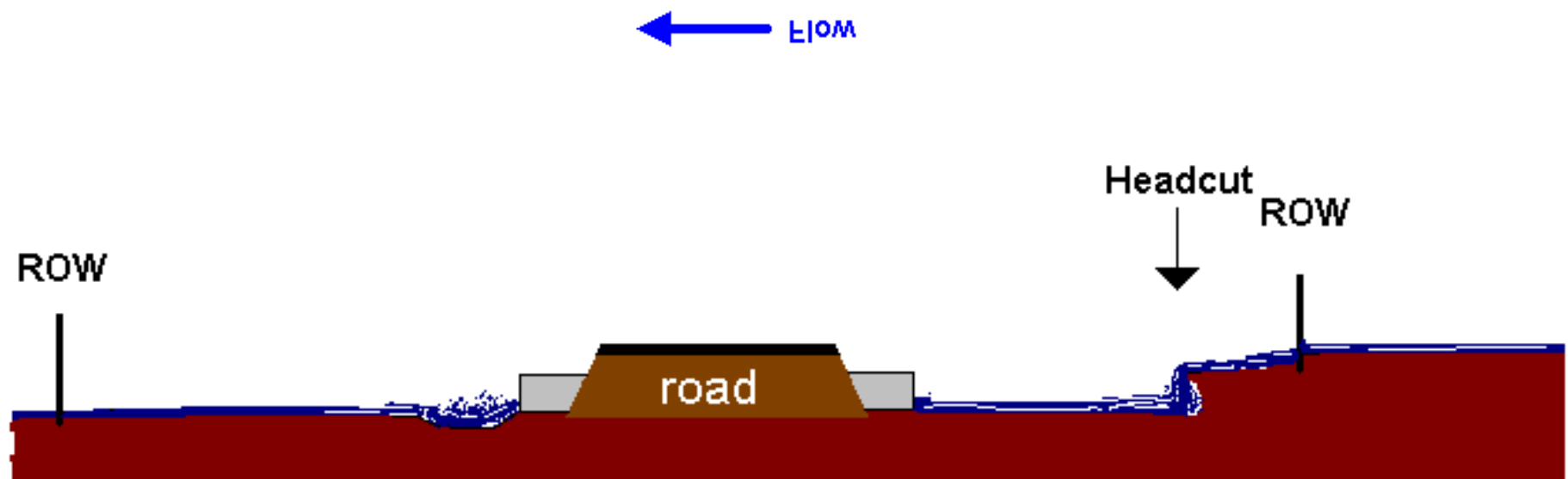
← Flow



Gully formation from improper culvert elevation



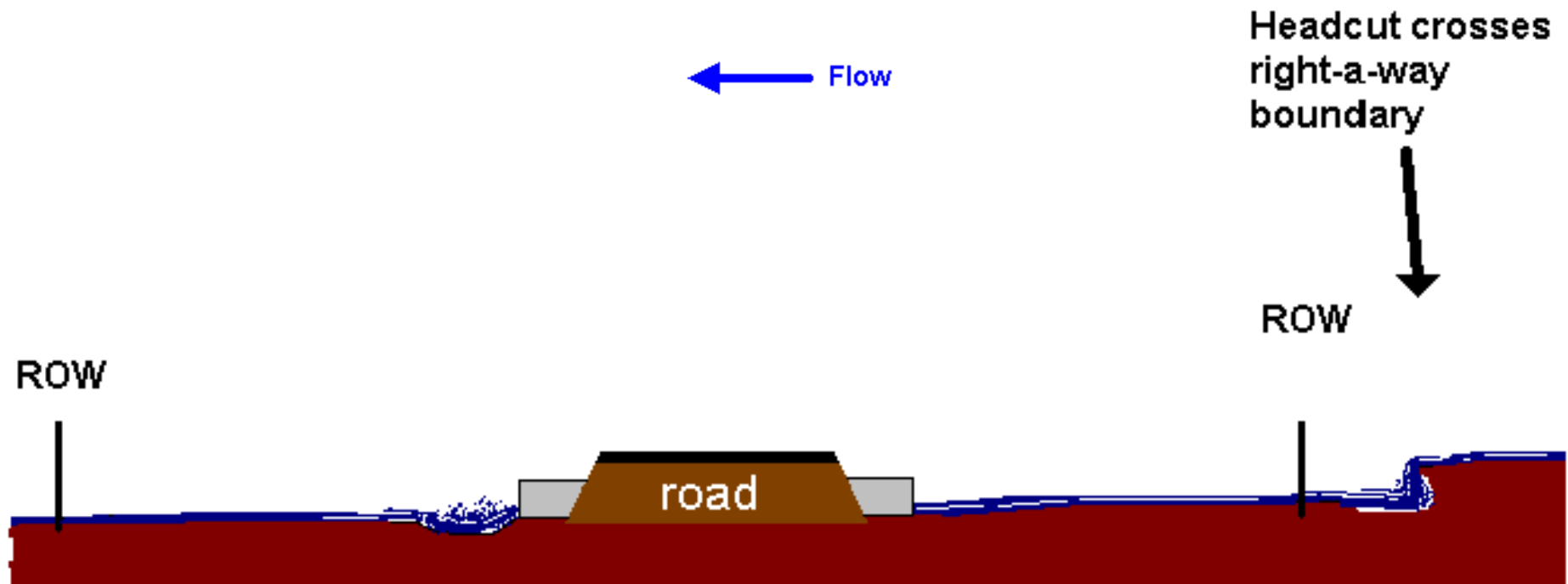
Gully formation from improper culvert elevation





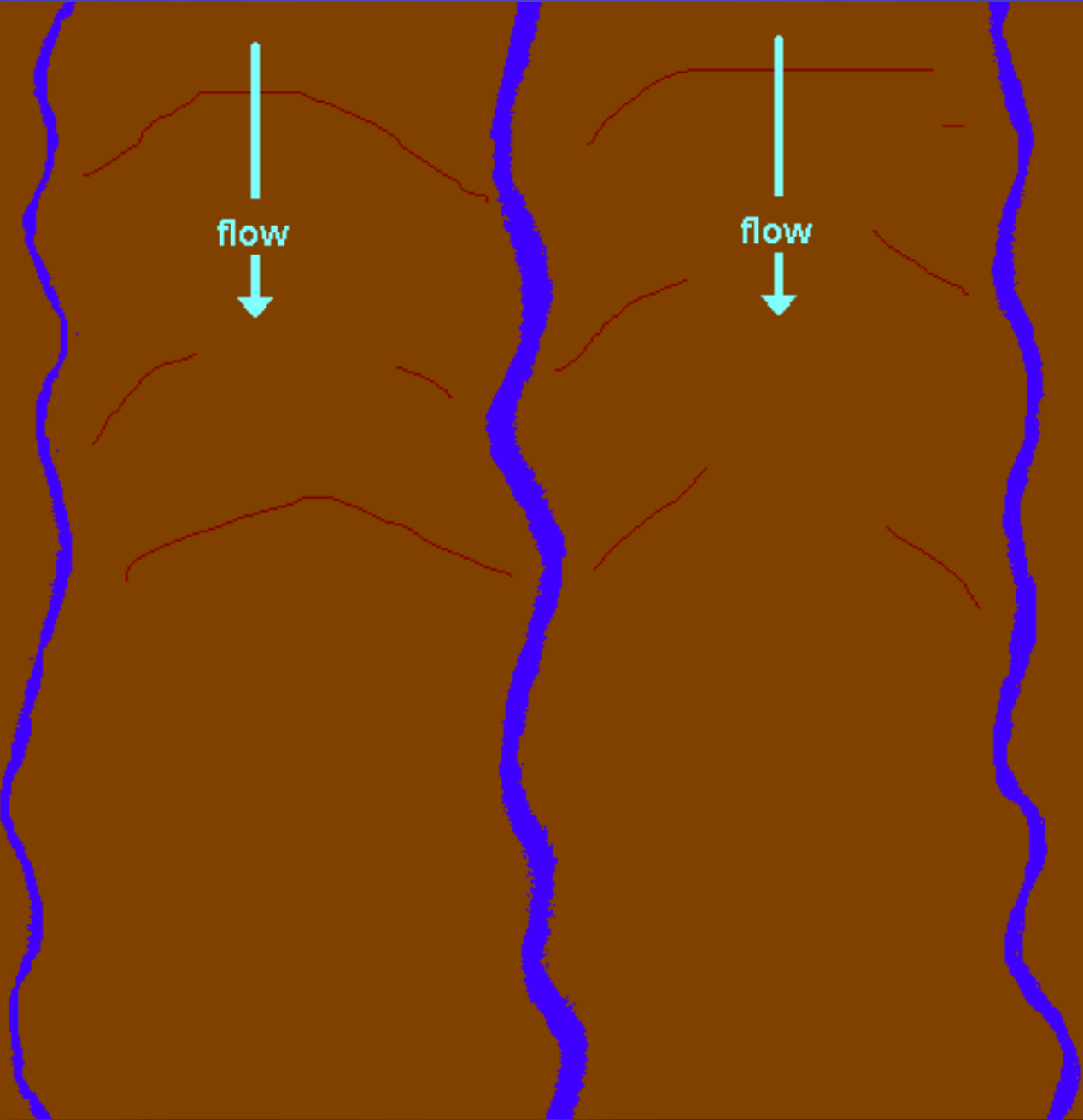
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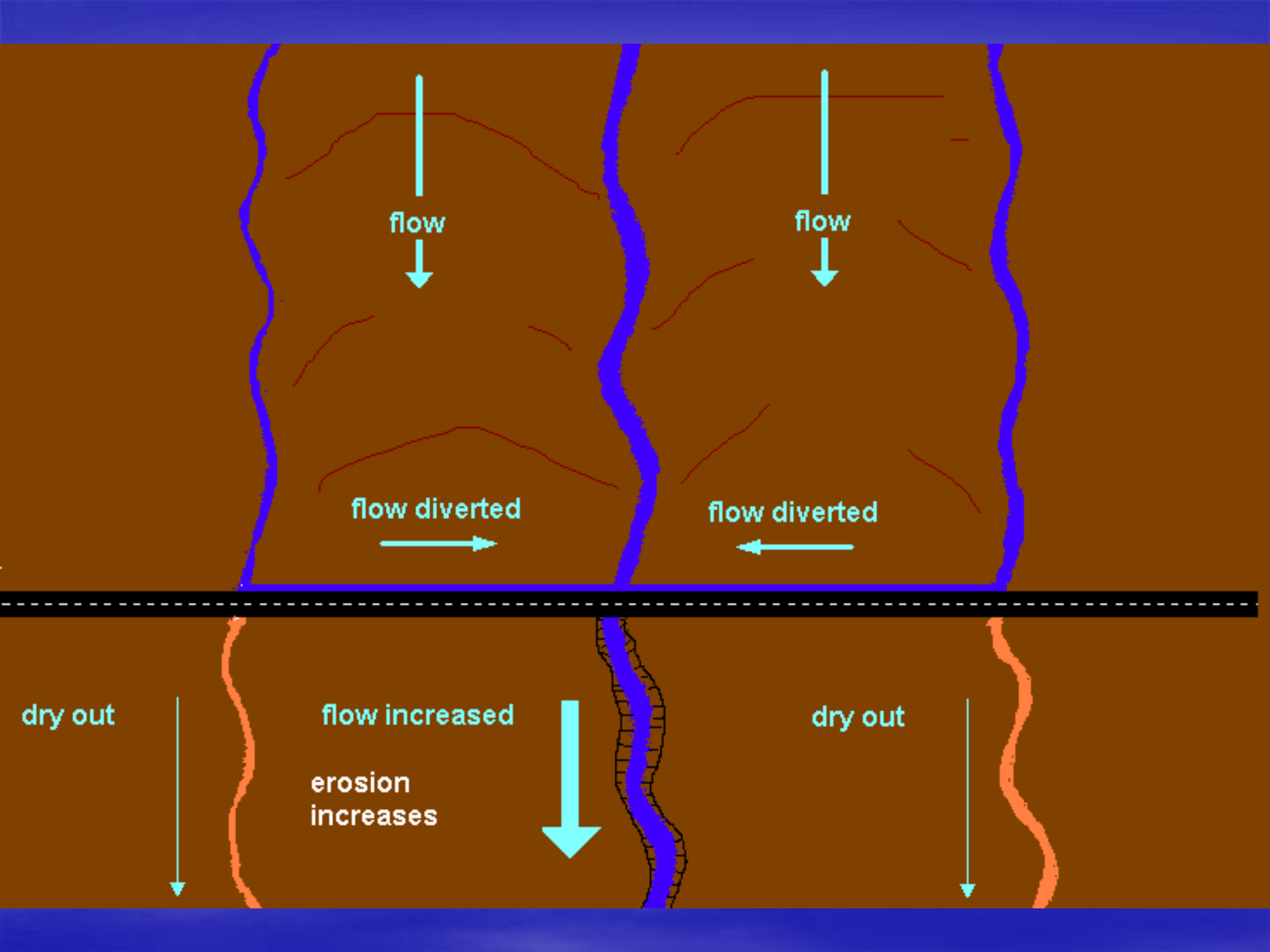
Gully formation from improper culvert elevation



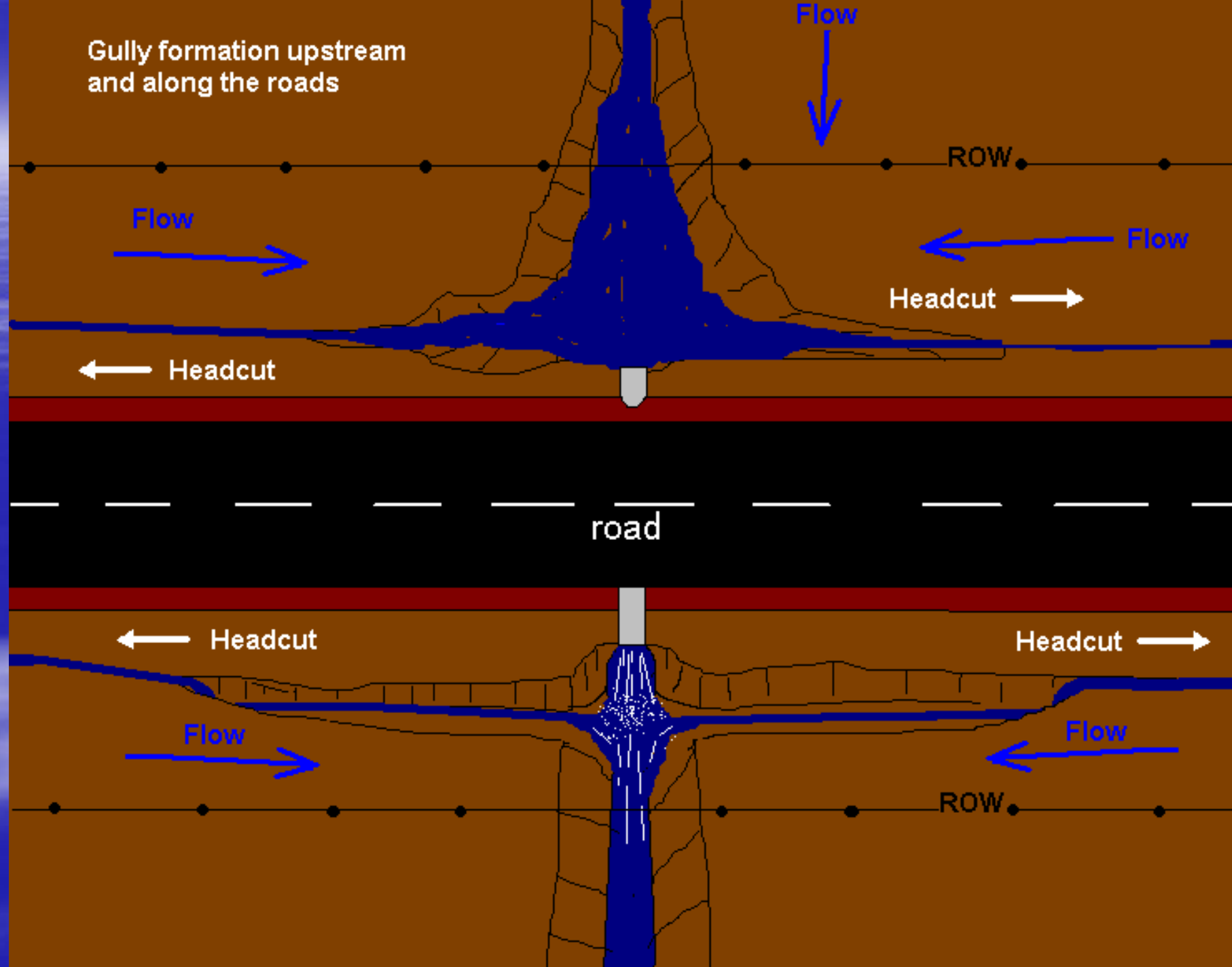
Natural
Conditions

Three distinct
drainages





Gully formation upstream
and along the roads

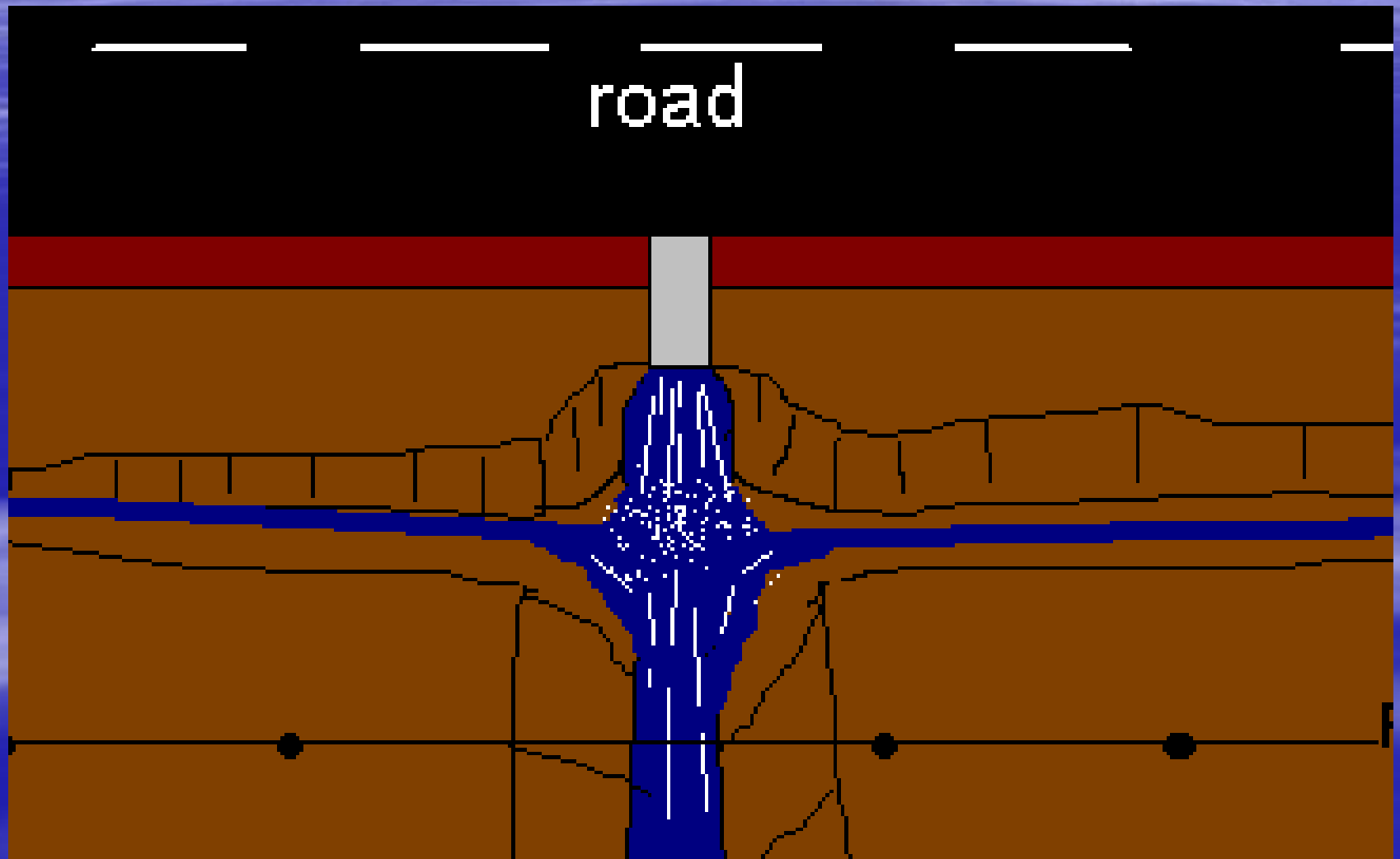




1/27/2000 2:29pm



Culvert outlets







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Telephone cable →



Only build or use roads that go along the edges of meadows.

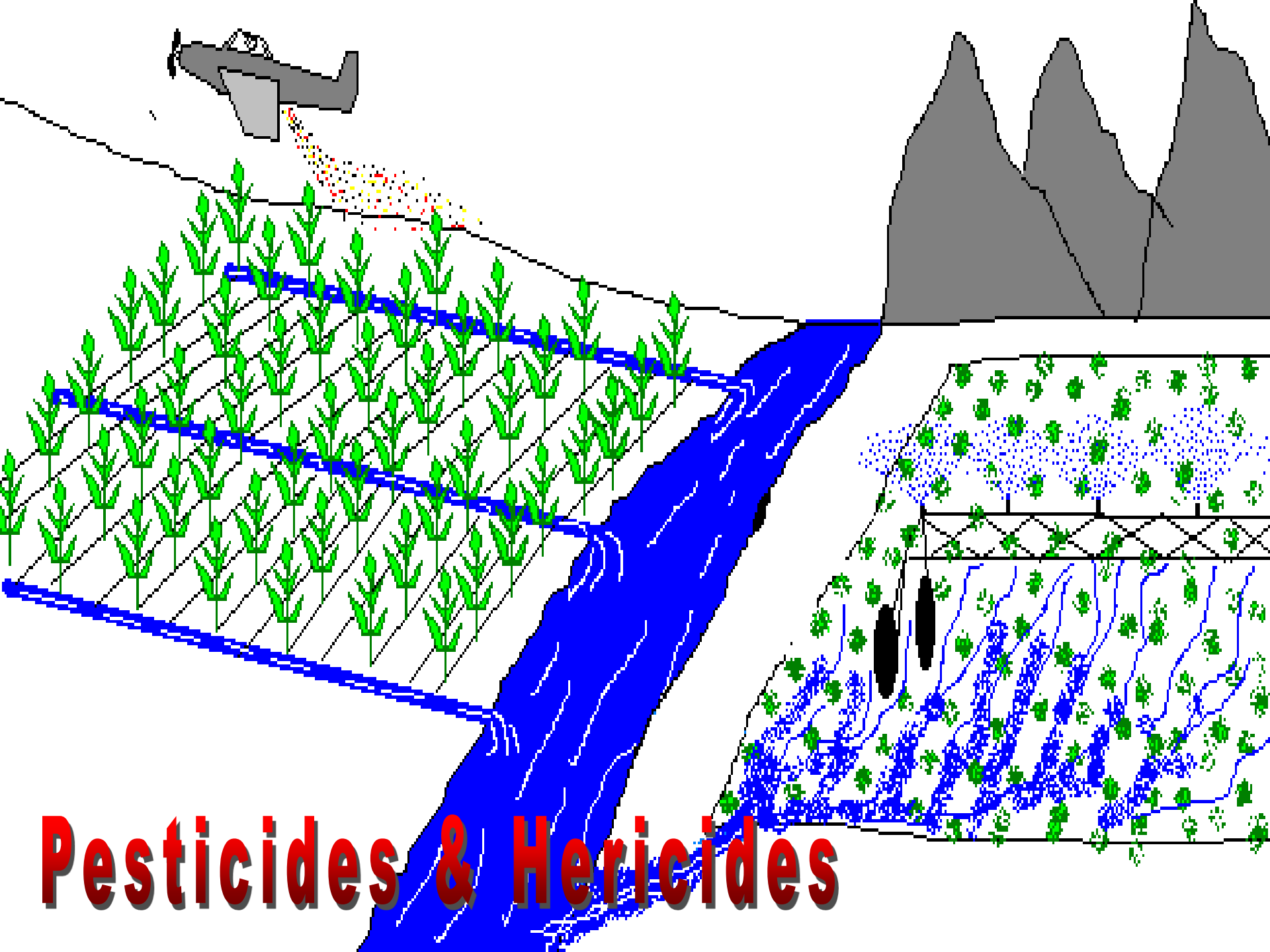


Build roads across the middle of meadows



When the first road gets too deep to drive in, move over and build a new one.

Irrigated agriculture



Pesticides & Hericides

Please be careful how & where you use pesticides & herbicides, they can be harmful to you & others who use the water!



Trash Dumping

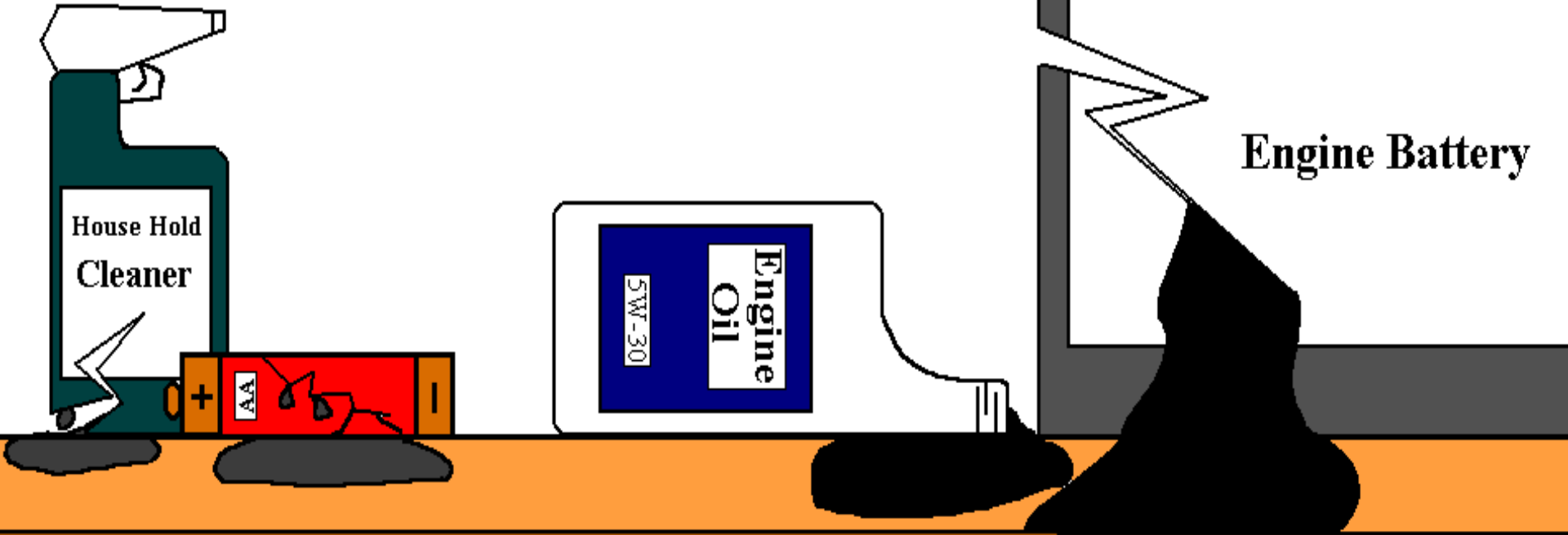


Don't Dump Trash!

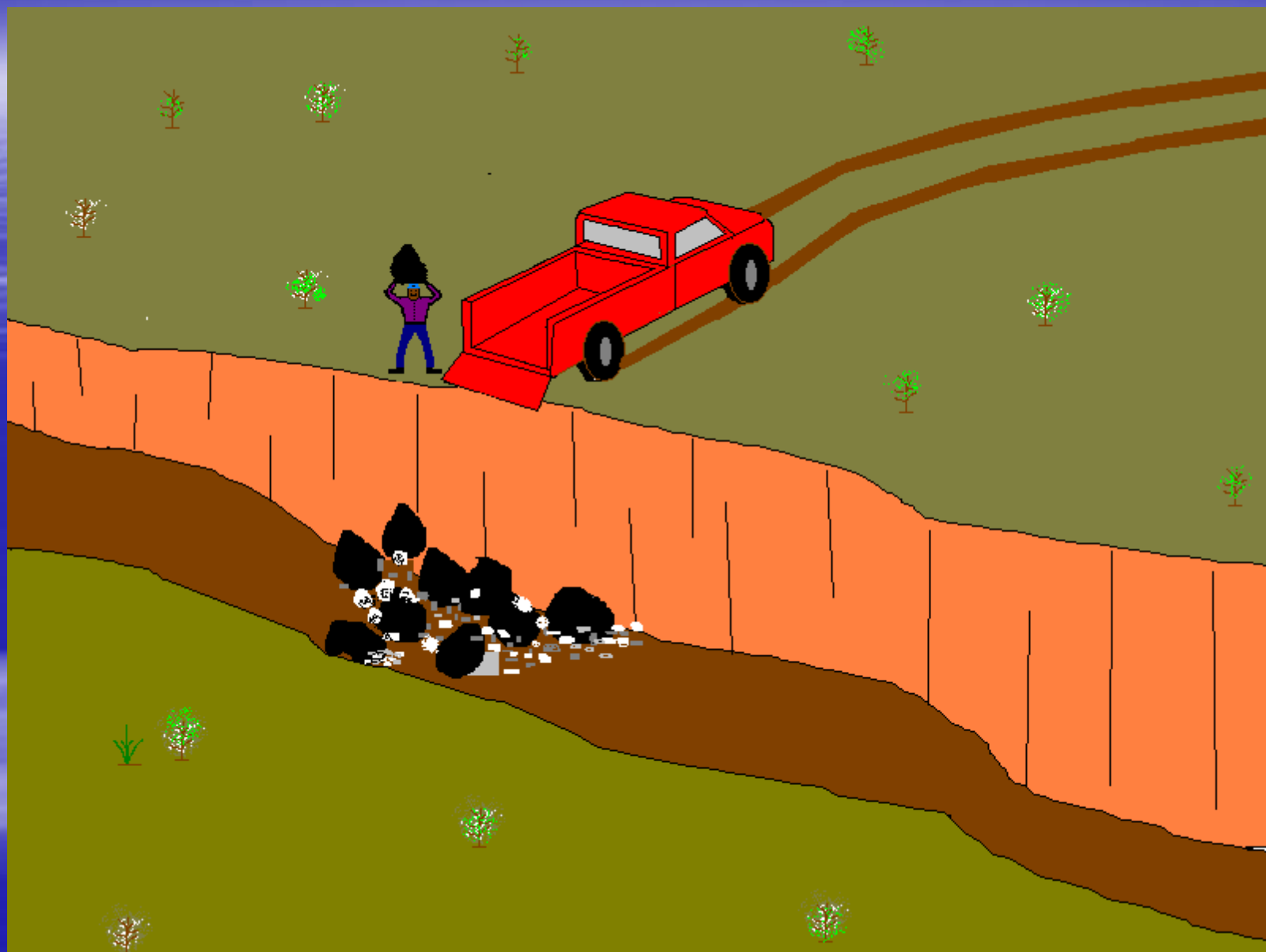


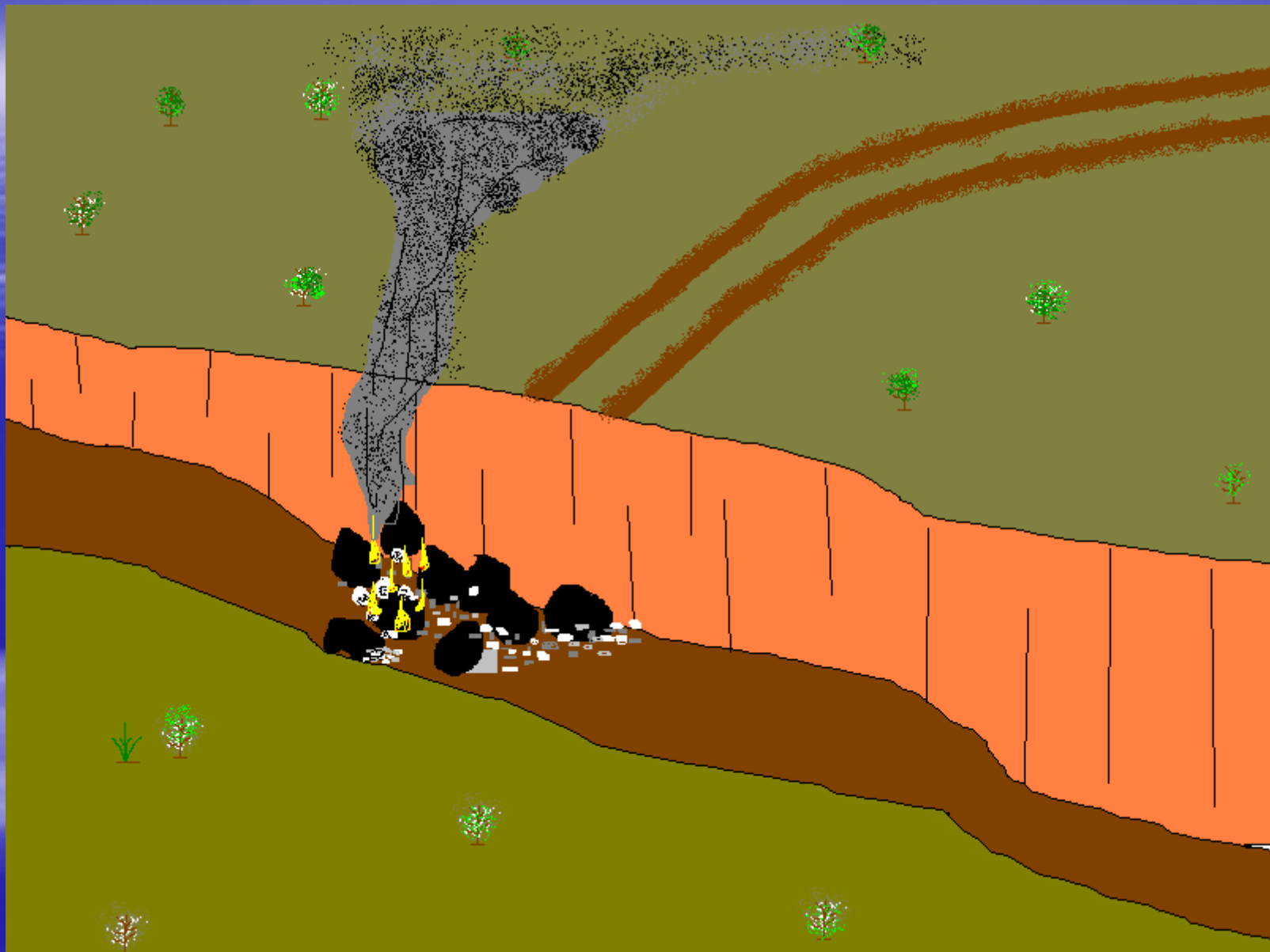
Illegal Trash Dumping

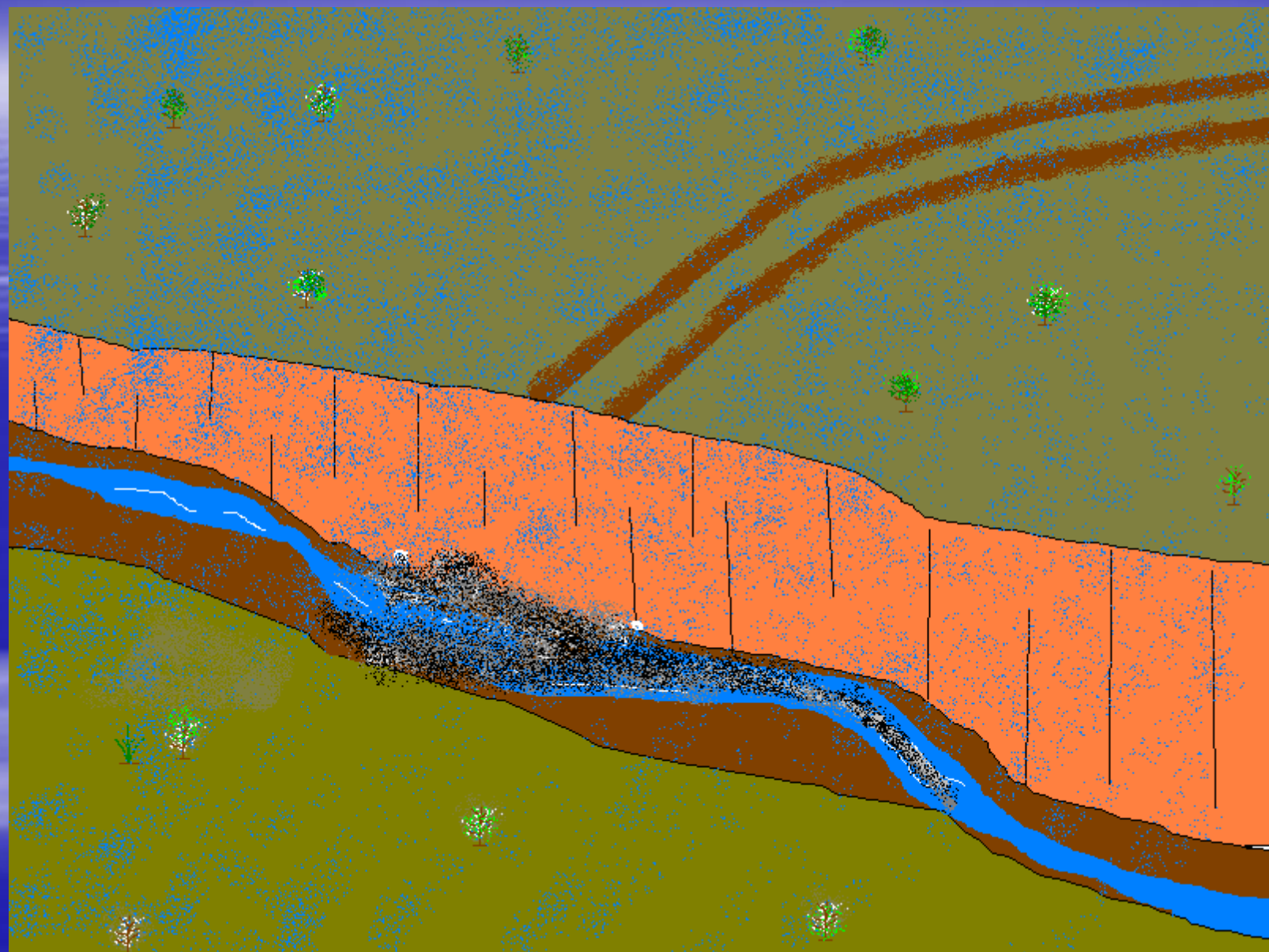
What's in your trash?



Many things in your trash could be toxic!







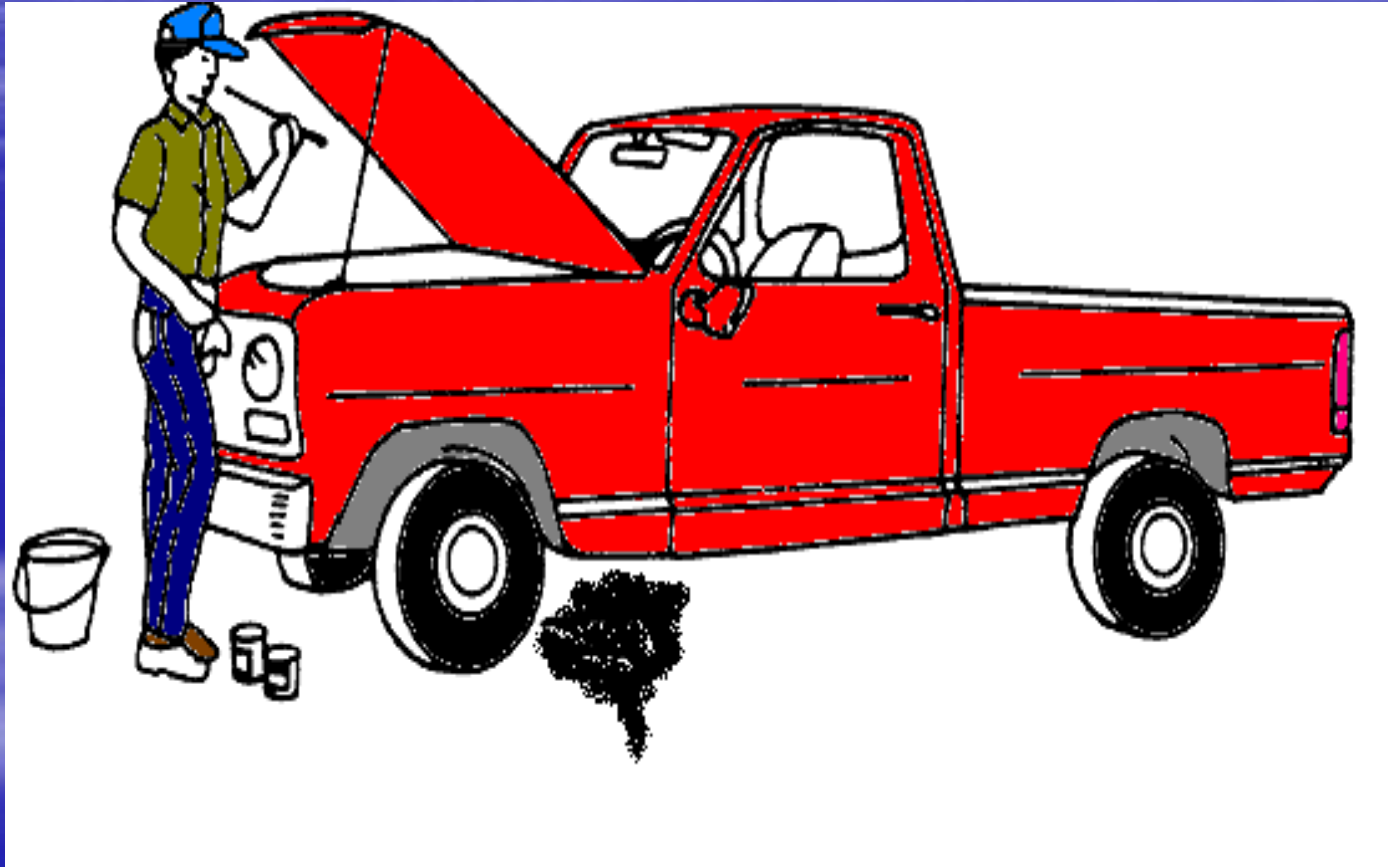




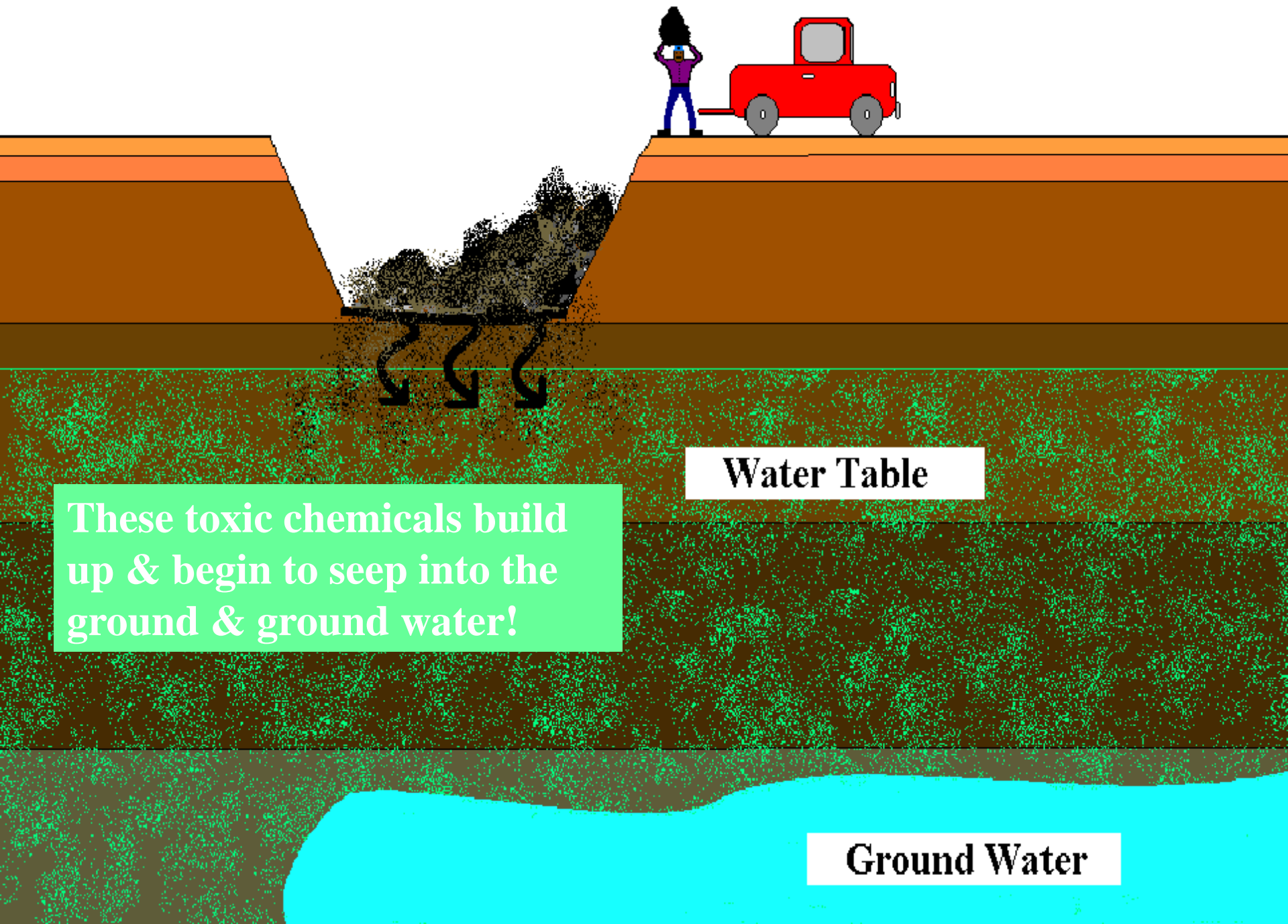




Also keep your vehicles in good condition!



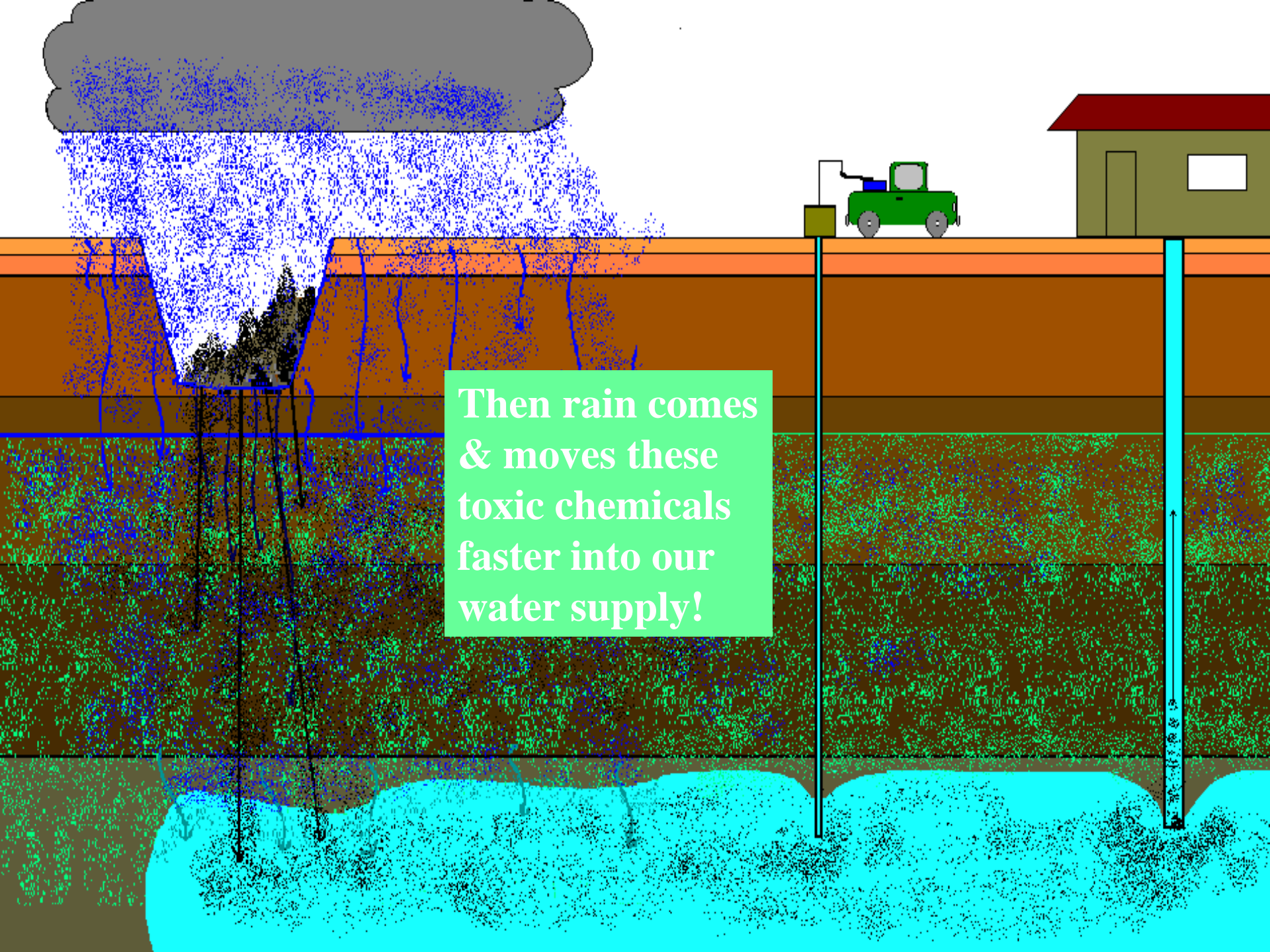
1 gallon of oil will contaminate 1 million gallons of water



These toxic chemicals build up & begin to seep into the ground & ground water!

Water Table

Ground Water



Then rain comes
& moves these
toxic chemicals
faster into our
water supply!

Where else do pollutants go?



**In Nature
everything comes
from somewhere,
& has to go
somewhere else**

Sometimes pollution can end up in our food chain!

Bowl Creek Restoration Project

June 1998 (year 1)



June 2000 (year 3)



Water Quality Monitoring



In field

Temperature

pH

Dissolved Oxygen

Conductivity

Turbidity

Total Dissolved Solids

In laboratory

Dissolved metals

Nutrients

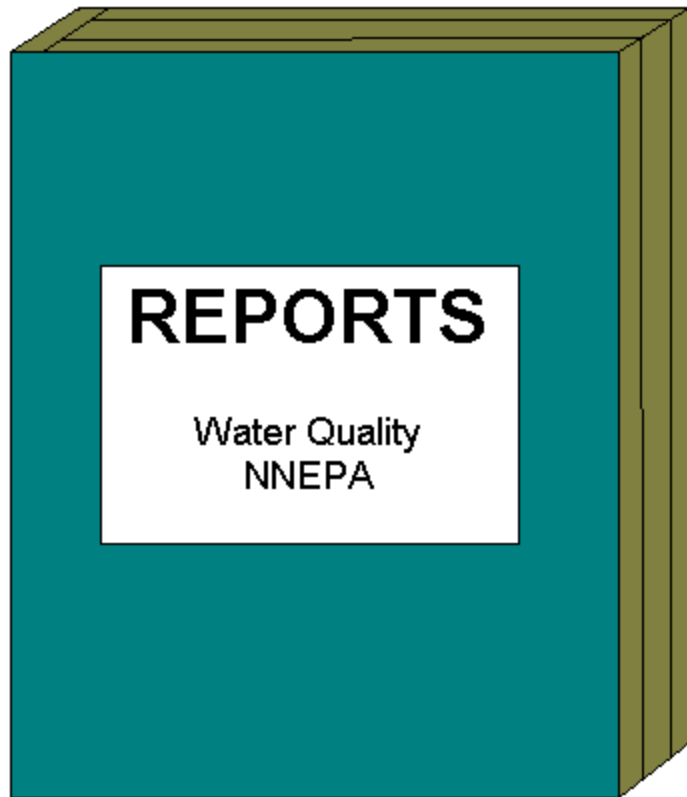
BOD

Total Dissolved Solids

Fecal and Total Coliform

Radionuclides

Reports under Clean Water Act




- Non-point Source Assessment and Management Plan
- Clean Water Action Plan Unified Watershed Assessment and Restoration Strategy
- Water Quality Assessment

Results

86% of impairment in Tribal
Lakes is due to nonpoint
sources

Results

95% of impairment identified
in the rivers of the Navajo
Nation is due to nonpoint
sources



Please help us protect and preserve the waters of our
mother earth for ourselves and future generation to
use and enjoy

Remember
To' be'e i'i' na

NOV 18 2003

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